

MWRA Employees' Retirement System

TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	1 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Composite	508,293,304	100.0	100.0	-3.0	-3.2	5.6	4.4	8.7	6.6	Jan-86
Allocation Index				-2.6	-3.0	6.1	4.9	7.6	--	Jan-86
Policy Index				-3.3	-3.3	6.2	4.9	8.1	--	Jan-86
Total Balanced	72,528,011	14.3	15.0	-1.2	-5.9	4.7	1.9	--	3.3	Dec-10
PRIT Core Fund	3,511,378	0.7		-2.7	-2.3	7.2	6.0	8.7	6.4	Apr-99
Terminated Wellington Opportunistic Investment	23,102,612	4.5	5.0	-2.2	-11.4	3.5	2.3	6.6	6.8	Nov-08
65% MSCI ACWI (Net) / 35% BBgBarc Aggregate				-3.9	-6.0	5.1	3.8	7.6	7.5	Nov-08
PIMCO All Asset	23,636,462	4.7	5.0	-1.1	-5.0	7.1	2.5	6.5	7.4	Dec-08
PIMCO All Asset Index				-0.1	-1.1	3.5	3.1	5.5	5.9	Dec-08
William Blair	22,277,559	4.4	5.0	0.2	-1.0	2.3	--	--	-1.1	Mar-15
60% MSCI ACWI (Net) / 40% FTSE WGBI				-3.3	-5.8	5.2	3.0	6.5	2.8	Mar-15
ICE BofAML 91 Days T-Bills TR				0.2	1.9	1.0	0.6	0.4	0.8	Mar-15
Total Domestic Equity	103,272,609	20.3	21.0	-9.3	-2.4	8.4	6.9	13.1	6.3	May-99
Russell 3000				-9.3	-5.2	9.0	7.9	13.2	5.6	May-99
Large Cap	74,051,455	14.6	15.0	-8.3	-0.1	8.6	7.9	--	11.6	Dec-10
Rhumblin Advisors S&P 500 Index Fund	32,384,467	6.4	7.0	-9.0	-4.4	9.1	8.4	13.0	7.7	Apr-97
S&P 500				-9.0	-4.4	9.3	8.5	13.1	7.7	Apr-97
Coho Relative Value Equity	20,953,380	4.1	4.0	-8.4	-1.3	--	--	--	9.1	Mar-16
Russell 1000 Value				-9.6	-8.3	7.0	5.9	11.2	9.4	Mar-16
Polen Focused Growth	20,713,608	4.1	4.0	-7.0	8.3	--	--	--	13.3	Feb-16
Russell 1000 Growth				-8.6	-1.5	11.1	10.4	15.3	13.7	Feb-16
Small Cap	29,221,154	5.7	6.0	-11.6	-7.6	8.2	5.0	--	10.7	Dec-10
Robeco Boston Partners Small Cap Value	14,742,408	2.9	3.0	-11.2	-16.4	4.8	2.5	12.2	9.9	Feb-97
Russell 2000 Value				-12.1	-12.9	7.4	3.6	10.4	8.4	Feb-97
Loomis Sayles Small Cap Growth	14,478,746	2.8	3.0	-12.1	1.1	11.0	7.2	15.6	5.9	Jan-97
Russell 2000 Growth				-11.7	-9.3	7.2	5.1	13.5	6.2	Jan-97



Since inception return is 8.3% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns.

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Total Non-US Equity	96,035,951	18.9	19.0	-5.0	-14.4	4.6	0.2	4.9	3.8	Mar-99
International Equity	72,130,983	14.2	15.0	-5.6	-13.5	3.7	0.3	--	--	Sep-05
SEG Baxter Street	26,476,414	5.2	5.0	-5.2	-8.3	--	--	--	6.4	May-16
MSCI ACWI ex USA				-4.5	-14.2	4.5	0.7	6.6	4.2	May-16
Schroder International Alpha Fund	23,189,045	4.6	5.0	-5.7	-12.3	4.0	1.2	--	4.4	Mar-12
MSCI ACWI ex USA				-4.5	-14.2	4.5	0.7	6.6	3.1	Mar-12
LMCG Small Cap International	22,465,525	4.4	5.0	-5.9	-19.5	--	--	--	-7.8	Aug-17
MSCI EAFE Small Cap				-6.4	-17.9	3.7	3.1	10.5	-6.9	Aug-17
Emerging Markets Equity	23,904,968	4.7	4.0	-3.3	-16.9	6.6	-0.1	--	-0.3	Nov-13
MSCI Emerging Markets				-2.7	-14.6	9.2	1.6	8.0	1.0	Nov-13
LMCG Emerging Markets	23,904,968	4.7	4.0	-3.3	-16.9	6.6	-0.1	--	-0.3	Dec-13
MSCI Emerging Markets				-2.7	-14.6	9.2	1.6	8.0	1.3	Dec-13
Total Fixed Income	114,100,504	22.4	22.0	0.3	-1.5	3.7	2.6	7.1	6.4	Mar-99
Loomis Sayles - Multi Sector Bonds	39,595,285	7.8	8.0	-1.1	-3.1	4.9	2.6	8.4	7.6	Mar-99
BBgBarc US Aggregate TR				1.8	0.0	2.1	2.5	3.5	4.6	Mar-99
BBgBarc US High Yield TR				-2.1	-2.1	7.2	3.8	11.1	6.6	Mar-99
Rhumbline TIPS	31,439,828	6.2	6.0	0.5	-1.3	--	--	--	0.7	Jun-16
BBgBarc US TIPS TR				0.5	-1.3	2.1	1.7	3.6	0.9	Jun-16
Lord Abbett Core Fixed Income	12,287,540	2.4		1.6	--	--	--	--	1.2	Apr-18
BBgBarc US Aggregate TR				1.8	0.0	2.1	2.5	3.5	1.5	Apr-18
Garcia Hamilton Fixed Income Aggregate	30,476,843	6.0		1.1	--	--	--	--	1.4	Apr-18
BBgBarc US Aggregate TR				1.8	0.0	2.1	2.5	3.5	1.5	Apr-18
Invesco Mortgage Recovery Loans Feeder Fund	301,008	0.1		5.4	19.5	2.3	11.1	--	15.5	Apr-10
BBgBarc US Aggregate TR				1.8	0.0	2.1	2.5	3.5	3.1	Apr-10



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Total Hedge Fund	26,830,030	5.3	5.0	-1.3	-2.1	2.0	1.1	4.1	2.8	Oct-06
PRIM Portfolio Completion Strategies	16,353,682	3.2	3.0	-1.5	-1.5	3.6	2.9	5.0	3.6	Oct-06
Corbin Pinehurst Partners	4,400,772	0.9		-1.4	--	--	--	--	-2.2	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				-1.6	-4.0	1.3	1.4	3.1	-2.1	Nov-18
UBS Neutral Alpha Strategies	4,895,777	1.0		-0.7	--	--	--	--	-2.1	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				-1.6	-4.0	1.3	1.4	3.1	-2.1	Nov-18
EnTrust	370,894	0.1	2.0							
Entrust Peru Wind Down	808,905	0.2								
Other	4,478,696	0.9	0.0	0.2	1.9	1.0	0.7	--	0.5	Dec-10
Cash Account	4,478,696	0.9		0.2	1.9	1.0	0.7	0.4	1.9	Feb-00
<i>91 Day T-Bills</i>				0.2	1.9	1.1	0.6	0.4	1.6	Feb-00
Total Real Estate	47,583,477	9.4	8.0	1.0	7.3	8.3	10.6	7.7	7.9	Apr-99
<i>NCREIF Property Index</i>				1.4	6.7	7.2	9.3	7.5	9.0	Apr-99
Morgan Stanley Prime Property (\$2.8m commitment in '95)	9,111,716	1.8		2.0	8.0	8.6	11.1	7.0	8.8	Sep-95
Invesco Mortgage Recovery II (\$3M commitment in '15)	1,607,271	0.3		11.4	24.9	16.1	--	--	15.1	Oct-15
Landmark VI (\$2m commitment in '11)	285,049	0.1		-2.0	-2.5	-0.5	5.6	--	9.5	Jul-11
Landmark VIII (\$4m commitment in '17)	674,150	0.1		2.1	-3.9	--	--	--	31.6	Nov-17
Courtland/Mesirow MFire (\$2m commitment in '11)	1,016,795	0.2		0.1	4.0	8.1	8.7	--	5.1	May-12
Cerberus (\$1.5m commitment in '12)	932,530	0.2		4.2	11.3	6.4	11.9	--	13.4	May-13
TA Realty Fund X LP (\$3.5m commitment in '12)	2,025,165	0.4		2.6	11.4	8.9	11.2	--	10.4	May-13
TerraCap Partners III, LP (\$2.6m commitment in '15)	2,769,112	0.5		9.1	7.2	11.7	--	--	15.6	Jul-15
TerraCap Partners IV, LP (\$4m commitment in '17)	4,514,848	0.9		4.2	13.0	--	--	--	13.1	Nov-17

Note:

Market values for Real estate managers are as of 12/31/2018 and are adjusted for cash flows. PRIM accounts are valued as of 12/31/2018. Importantly, all returns in this report, including those of the private real estate managers, are based on a time weighted return calculation and not based on IRRS, which can result in return differences.



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TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	1 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Private Equity	43,464,027	8.6	10.0	0.9	13.1	7.6	14.3	15.1	9.5	Apr-99
<i>Cambridge Associates US All PE</i>				-1.7	10.5	13.7	11.5	13.7	12.3	Apr-99
<i>NASDAQ W/O Income</i>				-9.5	-3.9	9.8	9.7	15.5	5.2	Apr-99
PRIM Vintage Year 2008 (\$3m commitment in '08)	1,382,004	0.3		4.3	18.5	21.9	21.5	15.1	8.7	Jun-08
PRIM Vintage Year 2009 (\$1m commitment in '09)	201,709	0.0		4.0	29.9	18.8	22.1	--	7.1	Nov-09
PRIM Vintage Year 2010 (\$1m commitment in '10)	716,012	0.1		3.1	29.0	22.2	22.1	--	9.4	Jun-10
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	1,251,168	0.2		6.3	27.5	23.6	24.4	--	3.1	May-11
PRIM Vintage Year 2012 (\$1m commitment in '12)	757,651	0.1		3.6	16.3	19.2	14.4	--	-20.3	Jun-12
PRIM Vintage Year 2014 (\$2m commitment in '14)	1,591,323	0.3		8.0	35.2	21.3	--	--	-2.0	Jun-14
PRIM Vintage Year 2017 (\$2m commitment in '17)	327,082	0.1		0.4	1.8	--	--	--	3.1	May-17
Alcentra European DLF (\$5m commitment in '14)	1,910,490	0.4		-0.3	6.3	6.6	--	--	8.3	Jan-15
Ascent Fund II (\$0.8m commitment in '99)	9,238	0.0		-0.8	-3.4	33.9	32.7	25.9	18.4	Jan-99
Ascent Fund IV (\$2m commitment in '04)	50,169	0.0		-64.6	-82.7	-56.5	-48.6	-25.9	-21.3	Jul-04
Ascent Fund IV-B (\$1m commitment in '16)	1,507,739	0.3		-6.0	-10.2	--	--	--	-1.4	Jul-16
Ascent Fund V (\$2m commitment in '08)	1,727,018	0.3		-1.2	-4.5	4.8	2.8	6.5	6.1	Oct-08
Ascent VI (\$3m commitment in '15)	2,453,462	0.5		-0.1	10.4	6.8	--	--	3.6	Dec-15
Castile Ventures III, L.P. (\$3m commitment in '07)	250,618	0.0		-35.6	-39.1	-36.9	-29.4	-18.5	-18.8	Jan-08
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	2,099,616	0.4		-2.7	2.6	--	--	--	2.4	Dec-17
Invesco Fund IV (\$3m commitment in '03)	482,219	0.1		0.0	-12.9	-0.1	3.0	--	--	Feb-04
Invesco Fund VI (\$5m commitment in '13)	6,599,704	1.3		2.5	13.2	12.7	15.5	--	14.6	Jul-13
Kayne Energy Fund VII (\$5m commitment in '15)	4,165,460	0.8		-10.1	-1.4	18.9	--	--	18.9	Jan-16
Foundry 2007 (\$3m commitment in '07)	382,029	0.1		-42.8	-9.1	-21.3	15.4	25.1	24.5	Dec-07
Foundry 2010 (\$3m commitment in '10)	3,623,919	0.7		-0.1	12.5	6.3	7.2	--	9.5	Jan-11
Foundry 2010 Annex (\$0.4m commitment in '15)	223,598	0.0		0.0	32.9	16.8	--	--	12.9	Sep-15
Pinebridge PEP V (\$6m commitment in '07)	1,202,231	0.2		-7.8	-10.4	-1.0	8.3	--	--	Mar-08
Landmark XV (\$3m commitment in '13)	1,255,777	0.2		0.5	17.6	14.3	10.9	--	15.6	Nov-13
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	5,310,018	1.0		21.5	64.5	--	--	--	39.0	Jan-17
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	2,485,752	0.5		8.2	26.9	--	--	--	17.2	Feb-17
Park Square Credit Opportunities III (\$3m commitment in '17)	798,980	0.2		3.0	--	--	--	--	2.3	Feb-18
Ironsides Constitution Opportunities (\$3m commitment in '18)	699,039	0.1		0.7	--	--	--	--	-1.0	Sep-18

Note:

Market values for Private Equity managers are as of 12/31/2018 and are adjusted for cash flows. PRIM accounts are valued as of 12/31/2018. Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRS, which can result in return differences.



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NOTES

- 1 - Results for periods longer than one year are annualized.
- 2 - Total Balances, Large Cap, Small Cap, and Other Composite performance starts 12/1/2010.
- 3 - Preliminary Total Composite net of fee since inception return is 6.6% for the current month.
- 4 - Preliminary Total Composite gross of fee since inception return is 8.3% for the current month.
- 5 - Targets, Allocation Index, and Policy Index have been updated to reflect new allocation of 04/30/2019.
- 6 - Policy Index changed from Nasdaq to Cambridge All PE to reflect as of 5/1/2012.
- 7 - Entrust liquidated on 10/30/2018. Remaining balance is a holdback.



Information Disclaimer

- Past performance is no guarantee of future results.
- All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.
- NEPC's source for portfolio pricing, calculation of accruals, and transaction information is the plan's custodian bank. Information on market indices and security characteristics is received from other sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.
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Reporting Methodology

- The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC generally reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.
- Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of return are annualized when the time period is longer than a year. Performance is presented gross and/or net of manager fees as indicated on each page.
- For managers funded in the middle of a month, the "since inception" return will start with the first full month, although actual inception dates and cash flows are taken into account in all Composite calculations.
- This report may contain forward-looking statements that are based on NEPC's estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.

