

ARROW™ ENHANCED PRODUCT WATER RECOVERY COST BENEFITS

PARAMETER	PLANT CAPACITY	COST OF WATER / DISPOSAL (\$/1000 GAL)	BASIC RO SYSTEM	"COMPETING" TECHNOLOGIES	ARROW PROCESS	ARROW PROCESS
	RAW WATER (MGD)*		(70% RECOVERY)	(85% RECOVERY)	(95% RECOVERY)	(98% RECOVERY)
PRODUCT WATER RECOVERY (%)			70%	85%	95%	98%
WASTE VOLUME (%)			30%	15%	5%	2%
% OF WASTE RECOVERED			0%	50%	83%	93%
WASTE VOLUME (MGD)	1.0		0.30	0.124	0.037	0.014
COST OF WATER (\$/annum)	1.0	2.0	\$730,000	\$601,176	\$537,895	\$521,429
COST OF WASTE (\$/annum)	1.0	2.0	\$219,000	\$90,176	\$26,895	\$10,429
TOTAL WATER COST (\$/annum)	1.0		\$949,000	\$691,353	\$564,789	\$531,857
SYSTEM CAPITAL COST (ZLD), \$	1.0		\$5,955,772	\$5,049,697	\$4,594,163	\$4,474,343
NET ANNUAL COST, \$			\$1,544,577	\$1,196,323	\$1,024,206	\$979,291
ANNUAL COST SAVINGS (\$/annum)				\$348,255	\$520,372	\$565,286
% ANNUAL COST SAVINGS				23%	34%	37%
WASTE VOLUME (MGD)	10.0		3.00	1.235	0.368	0.143
COST OF WATER (\$/annum)	10.0	2.0	\$7,300,000	\$6,011,765	\$5,378,947	\$5,214,286
COST OF WASTE (\$/annum)	10.0	2.0	\$2,190,000	\$901,765	\$268,947	\$104,286
TOTAL WATER COST (\$/annum)	10.0		\$9,490,000	\$6,913,529	\$5,647,895	\$5,318,571
SYSTEM CAPITAL COST (ZLD), \$	10.0		\$42,163,640	\$35,749,119	\$32,524,181	\$31,675,922
NET ANNUAL COST, \$			\$13,706,364	\$10,488,441	\$8,900,313	\$8,486,164
ANNUAL COST SAVINGS (\$/annum)				\$3,217,923	\$4,806,051	\$5,220,200
% ANNUAL COST SAVINGS				23%	35%	50%
WASTE VOLUME (MGD)	100.0		30.00	12.353	3.684	1.429
COST OF WATER (\$/annum)	100.0	2.0	\$73,000,000	\$60,117,647	\$53,789,474	\$52,142,857
COST OF WASTE (\$/annum)	100.0	2.0	\$21,900,000	\$9,017,647	\$2,689,474	\$1,042,857
TOTAL WATER COST (\$/annum)	100.0		\$94,900,000	\$69,135,294	\$56,478,947	\$53,185,714
SYSTEM CAPITAL COST (ZLD), \$	100.0		\$298,495,711	\$253,084,381	\$230,253,566	\$224,248,355
NET ANNUAL COST, \$			\$124,749,571	\$94,443,732	\$79,504,304	\$75,610,550
ANNUAL COST SAVINGS (\$/annum)				\$30,305,839	\$45,245,267	\$49,139,021
% ANNUAL COST SAVINGS				24%	36%	52%
WASTE VOLUME (MGD)	1.0		0.30	0.124	0.037	0.014
COST OF WATER (\$/annum)	1.0	5.0	\$1,825,000	\$1,502,941	\$1,344,737	\$1,303,571
COST OF WASTE (\$/annum)	1.0	5.0	\$547,500	\$225,441	\$67,237	\$26,071
TOTAL WATER COST (\$/annum)	1.0		\$2,372,500	\$1,728,382	\$1,411,974	\$1,329,643
SYSTEM CAPITAL COST (ZLD), \$	1.0		\$5,955,772	\$5,049,697	\$4,594,163	\$4,474,343
NET ANNUAL COST, \$			\$2,968,077	\$2,233,352	\$1,871,390	\$1,777,077
ANNUAL COST SAVINGS (\$/annum)				\$734,725	\$1,096,687	\$1,191,000
% ANNUAL COST SAVINGS				25%	37%	53%
WASTE VOLUME (MGD)	10.0		3.00	1.235	0.368	0.143
COST OF WATER (\$/annum)	10.0	5.0	\$18,250,000	\$15,029,412	\$13,447,368	\$13,035,714
COST OF WASTE (\$/annum)	10.0	5.0	\$5,475,000	\$2,254,412	\$672,368	\$260,714
TOTAL WATER COST (\$/annum)	10.0		\$23,725,000	\$17,283,824	\$14,119,737	\$13,296,429
SYSTEM CAPITAL COST (ZLD), \$	10.0		\$42,163,640	\$35,749,119	\$32,524,181	\$31,675,922
NET ANNUAL COST, \$			\$27,941,364	\$20,858,735	\$17,372,155	\$16,464,021
ANNUAL COST SAVINGS (\$/annum)				\$7,082,629	\$10,569,209	\$11,477,343
% ANNUAL COST SAVINGS				25%	38%	55%
WASTE VOLUME (MGD)	100.0		30.00	12.353	3.684	1.429
COST OF WATER (\$/annum)	100.0	5.0	\$182,500,000	\$150,294,118	\$134,473,684	\$130,357,143
COST OF WASTE (\$/annum)	100.0	5.0	\$54,750,000	\$22,544,118	\$6,723,684	\$2,607,143
TOTAL WATER COST (\$/annum)	100.0		\$237,250,000	\$172,838,235	\$141,197,368	\$132,964,286
SYSTEM CAPITAL COST (ZLD), \$	100.0		\$298,495,711	\$253,084,381	\$230,253,566	\$224,248,355
NET ANNUAL COST, \$			\$267,099,571	\$198,146,673	\$164,222,725	\$155,389,121
ANNUAL COST SAVINGS (\$/annum)				\$68,952,898	\$102,876,846	\$111,710,450
% ANNUAL COST SAVINGS				26%	39%	56%
WASTE VOLUME (MGD)	1.0		0.30	0.124	0.037	0.014
COST OF WATER (\$/annum)	1.0	8.0	\$2,920,000	\$2,404,706	\$2,151,579	\$2,085,714
COST OF WASTE (\$/annum)	1.0	8.0	\$876,000	\$360,706	\$107,579	\$41,714
TOTAL WATER COST (\$/annum)	1.0		\$3,796,000	\$2,765,412	\$2,259,158	\$2,127,429
SYSTEM CAPITAL COST (ZLD), \$	1.0		\$5,955,772	\$5,049,697	\$4,594,163	\$4,474,343
NET ANNUAL COST, \$			\$4,391,577	\$3,270,381	\$2,718,574	\$2,574,863
ANNUAL COST SAVINGS (\$/annum)				\$1,121,196	\$1,673,003	\$1,816,714
% ANNUAL COST SAVINGS				26%	38%	56%
WASTE VOLUME (MGD)	10.0		3.00	1.235	0.368	0.143
COST OF WATER (\$/annum)	10.0	8.0	\$29,200,000	\$24,047,059	\$21,515,789	\$20,857,143
COST OF WASTE (\$/annum)	10.0	8.0	\$8,760,000	\$3,607,059	\$1,075,789	\$417,143
TOTAL WATER COST (\$/annum)	10.0		\$37,960,000	\$27,654,118	\$22,591,579	\$21,274,286
SYSTEM CAPITAL COST (ZLD), \$	10.0		\$42,163,640	\$35,749,119	\$32,524,181	\$31,675,922
NET ANNUAL COST, \$			\$42,176,364	\$31,229,030	\$25,843,997	\$24,441,878
ANNUAL COST SAVINGS (\$/annum)				\$10,947,334	\$16,332,367	\$17,734,486
% ANNUAL COST SAVINGS				26%	39%	57%
WASTE VOLUME (MGD)	100.0		30.00	12.353	3.684	1.429
COST OF WATER (\$/annum)	100.0	8.0	\$292,000,000	\$240,470,588	\$215,157,895	\$208,571,429
COST OF WASTE (\$/annum)	100.0	8.0	\$87,600,000	\$36,070,588	\$10,757,895	\$4,171,429
TOTAL WATER COST (\$/annum)	100.0		\$379,600,000	\$276,541,176	\$225,915,789	\$212,742,857
SYSTEM CAPITAL COST (ZLD), \$	100.0		\$298,495,711	\$253,084,381	\$230,253,566	\$224,248,355
NET ANNUAL COST, \$			\$409,449,571	\$301,849,615	\$248,941,146	\$235,167,693
ANNUAL COST SAVINGS (\$/annum)				\$107,599,957	\$160,508,425	\$174,281,879
% ANNUAL COST SAVINGS				26%	39%	58%

(*) MGD = Million US Gallons per Day

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