PLAN MAESTRO DE AGUA POTABLE Y ALCANTARILLADO DE EMAPAT S.R.Ltda.
EVALUACION DE ALTERNATIVA DE MINIMO COSTO - SISTEMA DE AGUA POTABLE
2004 - 2033

ALTERNATIVA 1 : CAPTACION DE AGUA SUPERFICIAL DEL RIO MADRE DE DIOS - CONSTRUCCION DE NUEVA PTA

DESCRIPCION	VIDA UTIL (AÑOS)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	TOTAL S/.	VALOR DE RECUPERO
																AÑOS																	
CAPTACION		0	0	342,560	0	0	0	0	0	0	0	0	0	0	0	233,816	0	0	233,816	0	0	0	0	0	0	0	0	0	0	0	233,816	1,044,010	256,654
Construcción de balsa cautiva - Qmd = 112 lps - 2 bombas P= 95 HP	30	0	0	342,560	0	0	0	0	0	0	0	0	0	0	0	0	0	0	233,816	0	0	0	0	0	0	0	0	0	0	0	0	576,377	38,428
Ampliación de balsa cautiva - Qmd = 224lps - 2 bombas P = 95 HP	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	233,816	0	0	0	0	0	0	0	0	0	0	0	0	0	0	233,816	467,633	218,229
LINEA DE IMPULSION DE AGUA CRUDA		0	0	26,980	0	0	0	0	0	0	0	0	0	0	0	24,047	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51,027	18,450
Suministro de tubería flexible de 50.0 m - 350 mm y PVC de 180 m - 350 mm	35	0	0	26,980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,980	5,396
Suministro de tubería flexible de 50.0 m - 350 mm y PVC de 155 m - 350 mm	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24,047	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24,047	13,054
TRATAMIENTO		0	0	1,832,186	0	0	0	0	0	0	0	0	0	0	0	1,421,795	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,253,981	1,402,733
Construcción de Planta de Tratamiento I Etapa Qmd = 112 lps	40	0	0	1,832,186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,832,186	549,656
Construcción de Planta de Tratamiento II Etapa Qmd = 224 lps	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,421,795	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,421,795	853,077
ESTACION DE BOMBEO DE AGUA TRATADA A RESERVORIO		0	0	407,263	0	0	0	0	0	0	0	0	0	0	0	519,504	0	0	0	0	0	0	0	0	0	0	0	0	0	0	519,504	1,446,271	607,049
Estación de bombeo a R1 - Qmd = 112 lps - 3 bombas - P = 65 HP	40	0	0	407,263	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	407,263	122,179
Ampliac. de E.B. a R1 - Qmd = 135 lps - 3 bombas - P = 80 HP	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	306,780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	306,780	613,560	286,326
Ampliac. de E.B. a R2 - Qmd = 89 lps - 3 bombas - P = 50 HP	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	212,724	0	0	0	0	0	0	0	0	0	0	0	0	0	0	212,724	425,449	198,543
LINEA DE IMPULSION DE AGUA TRATADA		0	0	269,799	0	0	0	0	0	0	0	0	0	0	0	276,110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	545,909	203,848
Suministro de 2,300.0 m - 350 mm - PVC	35	0	0	269,799	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	269,799	53,960
Suministro de 3,160.0 m - 300 mm - PVC	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	276,110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	276,110	149,888
RESERVORIO		0	0	1,040,654	0	0	0	0	0	0	0	0	0	0	0	717,118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,757,772	742,467
Construcción de reservorio V = 2,700 m3	40	0	0	1,040,654	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,040,654	312,196
Construcción de reservorio V = 1,000 m3	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	717,118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	717,118	430,271
REDES PRIMARIAS		0	0	347,397	228,078	0	0	0	0	0	0	0	0	0	0	268,935	0	0	0	0	0	118,138	0	0	0	0	132,573	0	0	0	0	1,095,120	383,514
Suministro de redes primarias de distribución	30	0	0	347,397	228,078	0	0	0	0	0	0	0	0	0	0	268,935	0	0	0	0	0	118,138	0	0	0	0	132,573	0	0	0	0	1,095,120	383,514
REDES SECUNDARIAS		68,787	92,365	123,773	119,527	114,740	109,383	159,585	117,996	173,620	177,029	180,470	183,942	187,445	190,980	194,546	198,144	201,773	205,433	209,125	212,848	216,602	220,388	224,205	228,054	231,934	235,845	239,787	227,187	221,532	224,284	5,491,326	3,031,040
Suministro de redes secundarias de distribución	30	68,787	92,365	123,773	119,527	114,740	109,383	159,585	117,996	173,620	177,029	180,470	183,942	187,445	190,980	194,546	198,144	201,773	205,433	209,125	212,848	216,602	220,388	224,205	228,054	231,934	235,845	239,787	227,187	221,532	224,284	5,491,326	3,031,040
Total General (Nuevos Soles)		68,787	92,365	4,390,912	347,605	114,740	109,383	159,585	117,996	173,620	177,029	180,470	183,942	187,445	190,980	3,655,872	198,144	201,773	439,249	209,125	212,848	334,740	220,388	224,205	228,054	231,934	368,418	239,787	227,187	221,532	977,005	14,685,416	6,545,755
Total General (U.S. Dólares)		19,812	26,603	1,264,577	100,117	33,047	31,504	45,963	33,985	50,006	50,988	51,979	52,979	53,988	55,006	1,052,950	57,069	58,114	126,512	60,232	61,304	96,411	63,476	64,575	65,684	66,801	106,111	69,063	65,434	63,805	281,568	4,229,670	1,914,100
Participación Porcentual		0.47%	0.63%	29.90%	2.37%	0.78%	0.74%	1.09%	0.80%	1.18%	1.21%	1.23%	1.25%	1.28%	1.30%	24.89%	1.35%	1.37%	2.99%	1.42%	1.45%	2.28%	1.50%	1.53%	1.55%	1.58%	2.51%	1.63%	1.55%	1.51%	6.66%	100.00%	

Tasa de Descuento : 9%
Tipo de cambio (dic 2003): 3.47 soles/ US $

Costo de Inversión (VNA): 6,641,838
Costo de O & M (VNA): 6,056,062
Valor de Recupero (VNA): 500,898
Valor Actual de Costo: S/.12,199,002

ALTERNATIVA 2 : CAPTACION DE AGUA SUPERFICIAL DEL RIO TAMBOPATA - CONSTRUCCION DE NUEVA PTA

DESCRIPCION	VIDA UTIL (AÑOS)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	TOTAL S/.	VALOR DE RECUPERO
																AÑOS																	
CAPTACION		0	0	332,917	0	0	0	0	0	0	0	0	0	0	0	224,173	0	0	224,173	0	0	0	0	0	0	0	0	0	0	0	224,173	1,005,436	246,387
Construcción de balsa cautiva - Qmd = 112 lps - 2 bombas P= 90 HP	30	0	0	332,917	0	0	0	0	0	0	0	0	0	0	0	0	0	0	224,173	0	0	0	0	0	0	0	0	0	0	0	0	557,090	37,139
Ampliación de balsa cautiva - Qmd = 224lps - 2 bombas P = 90 HP	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	224,173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	224,173	448,346	209,229
LINEA DE IMPULSION DE AGUA CRUDA		0	0	65,104	0	0	0	0	0	0	0	0	0	0	0	65,690	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130,794	13,021
Suministro de tubería flexible de 50.0 m - 350 mm y PVC de 505 m - 350 mm	35	0	0	65,104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65,104	13,021
Suministro de tubería flexible de 50.0 m - 350 mm y PVC de 510 m - 350 mm	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65,690	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65,690	35,660
TRATAMIENTO		0	0	1,832,186	0	0	0	0	0	0	0	0	0	0	0	1,421,795	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,253,981	1,402,733
Construcción de Planta de Tratamiento I Etapa Qmd = 112 lps	40	0	0	1,832,186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,832,186	549,656
Construcción de Planta de Tratamiento II Etapa Qmd = 224 lps	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,421,795	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,421,795	853,077
ESTACION DE BOMBEO DE AGUA TRATADA A RESERVORIO		0	0	407,263	0	0	0	0	0	0	0	0	0	0	0	556,735	0	0	0	0	0	0	0	0	0	0	0	0	0	0	550,735	1,558,733	636,198
Estación de bombeo - Qmd = 112 lps - 3 bombas - P = 65 HP	40	0	0	407,263	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	407,263	122,179
Ampliac. de E.B. a R1 - Qmd = 135 lps - 3 bombas - P = 80 HP	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	321,615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	321,615	643,231	300,174
Ampliación de E.B. a R2 - Qmd = 89 lps - 3 bombas - P = 55 HP	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	229,120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	229,120	458,239	213,845
LINEA DE IMPULSION DE AGUA TRATADA		0	0	299,711	0	0	0	0	0	0	0	0	0	0	0	462,310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	762,021	59,942
Suministro de 2,555.0 m - 350 mm - PVC	35	0	0	299,711	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	299,711	59,942
Suministro de 5,291.0 m - 300 mm - PVC	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	462,310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	462,310	250,946
RESERVORIO		0	0	1,040,654	0	0	0	0	0	0	0	0	0	0	0	717,118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,757,772	312,196
Construcción de reservorio V = 2,700 m3	40	0	0	1,040,654	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,040,654	312,196
Construcción de reservorio V = 1,000 m3	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	717,118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	717,118	430,271
REDES PRIMARIAS		0	0	347,397	228,078	0	0	0	0	0	0	0	0	0	0	268,935	0	0	0	0	0	118,138	0	0	0	0	132,573	0	0	0	0	1,095,120	383,514
Suministro. de redes primarias de distribución	30	0	0	347,397	228,078	0	0	0	0	0	0	0	0	0	0	268,935	0	0	0	0	0	118,138	0	0	0	0	132,573	0	0	0	0	1,095,120	383,514
REDES SECUNDARIAS		68,787	92,365	123,773	119,527	114,740	109,383	159,585	117,996	173,620	177,029	180,470	183,942	187,445	190,980	194,546	198,144	201,773	205,433	209,125	212,848	216,602	220,388	224,205	228,054	231,934	235,845	239,787	227,187	221,532	224,284	5,491,326	3,031,040
Suministro. de redes secundarias de distribución	30	68,787	92,365	123,773	119,527	114,740	109,383	159,585	117,996	173,620	177,029	180,470	183,942	187,445	190,980	194,546	198,144	201,773	205,433	209,125	212,848	216,602	220,388	224,205	228,054	231,934	235,845	239,787	227,187	221,532	224,284	5,491,326	3,031,040
Total General (Nuevos Soles)		68,787	92,365	4,449,005	347,605	114,740	109,383	159,585	117,996	173,620	177,029	180,470	183,942	187,445	190,980	3,905,302	198,144	201,773	429,606	209,125	212,848	334,740	220,388	224,205	228,054	231,934	368,418	239,787	227,187	221,532	999,192	15,005,183	6,095,012
Total General (U.S. Dólares)		19,812	26,603	1,281,395	100,117	33,047	31,504	45,963	33,985	50,006	50,988	51,979	52,979	53,988	55,006	1,124,799	57,069	58,114	123,734	60,232	61,304	96,411	63,476	64,575	65,684	66,801	106,111	69,063	65,434	63,805	287,786	4,321,789	1,752,598
Participación Porcentual		0.46%	0.62%	29.65%	2.32%	0.76%	0.73%	1.06%	0.79%	1.16%	1.18%	1.20%	1.23%	1.25%	1.27%	26.03%	1.32%	1.34%	2.86%	1.39%	1.42%	2.23%	1.47%	1.49%	1.52%	1.55%	2.46%	1.60%	1.51%	1.48%	6.66%	100.00%	

Tasa de Descuento : 9.00%
Tipo de cambio (dic 2003): 3.472 soles/ US $

Costo de Inversión (VNA): 6,765,172
Costo de O & M (VNA): 6,047,142
Valor de Recupero (VNA): 458,634
Valor Actual de Costo: S/.12,353,679

ALTERNATIVA 3 : MEJORAMIENTO DE PTA PATENTADA EXISTENTE - CAPTACION DE AGUA SUPERFICIAL DEL RIO MADRE DE DIOS - CONSTRUCCION DE NUEVA PTA

DESCRIPCION	VIDA UTIL (AÑOS)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	TOTAL S/.	VALOR DE RECUPERO
																AÑOS																	
CAPTACION		0	0	332,917	0	0	0	0	0	0	0	0	0	0	0	0	0	224,173	224,173	0	0	0	0	0	0	0	0	0	0	0	0	781,263	52,084
Construcción de balsa cautiva - Qmd = 100 lps - 2 bombas P= 90 HP	30	0	0	332,917	0	0	0	0	0	0	0	0	0	0	0	0	0	0	224,173	0	0	0	0	0	0	0	0	0	0	0	0	557,090	37,139
Ampliación de balsa cautiva - Qmd = 200 lps - 2 bombas P = 90 HP	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	224,173	0	0	0	0	0	0	0	0	0	0	0	0	0	224,173	14,945
LINEA DE IMPULSION DE AGUA CRUDA		0	0	20,097	0	0	0	0	0	0	0	0	0	0	0	0	0	17,912	0	0	0	0	0	0	0	0	0	0	0	0	0	38,009	4,019
Suministro de tubería flexible de 50.0 m - 300 mm y PVC de 180 m - 300 mm	35	0	0	20,097	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20,097	4,019
Suministro de tubería flexible de 50.0 m - 300 mm y PVC de 155 m - 300 mm	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17,912	0	0	0	0	0	0	0	0	0	0	0	0	0	17,912	10,747
TRATAMIENTO		0	111,509	1,700,616	0	0	0	0	0	0	0	0	0	0	0	0	0	1,376,809	0	0	0	0	0	0	0	0	0	0	0	0	0	3,188,934	1,368,429
Mejoramiento de la Planta patentada	30	0	111,509	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81,729	0	0	0	0	0	0	0	0	0	0	0	0	0	193,238	6,441
Construcción de Planta de Tratamiento I Etapa Qmd = 100 lps	40	0	0	1,700,616	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,700,616	510,185
Construcción de Planta de Tratamiento II Etapa Qmd = 200 lps	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,295,080	0	0	0	0	0	0	0	0	0	0	0	0	0	1,295,080	841,802
ESTACION DE BOMBEO DE AGUA TRATADA A RESERVORIO		0	0	375,420	0	0	0	0	0	0	0	0	0	0	0	0	0	473,687	0	0	0	0	0	0	0	0	0	0	0	0	0	849,107	187,850
Estación de bombeo - Qmd = 100 lps - 3 bombas - P = 55 HP	40	0	0	375,420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	375,420	112,626
Ampliac. de E.B. a R1 - Qmd = 111 lps - 3 bombas - P = 65 HP	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	260,963	0	0	0	0	0	0	0	0	0	0	0	0	0	260,963	53,290
Ampliación de E.B. a R2 - Qmd = 89 lps - 3 bombas - P = 50 HP	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	212,724	0	0	0	0	0	0	0	0	0	0	0	0	0	212,724	21,934
LINEA DE IMPULSION DE AGUA TRATADA		0	0	269,799	0	0	0	0	0	0	0	0	0	0	0	0	0	276,110	0	0	0	0	0	0	0	0	0	0	0	0	0	545,909	53,960
Suministro de 2,300.0 m - 350 mm - PVC	35	0	0	269,799	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	269,799	53,960
Suministro de 3,160.0 m - 300 mm - PVC	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	276,110	0	0	0	0	0	0	0	0	0	0	0	0	0	276,110	165,666
RESERVORIO		0	0	1,040,654	0	0	0	0	0	0	0	0	0	0	0	0	0	717,118	0	0	0	0	0	0	0	0	0	0	0	0	0	1,757,772	312,196
Construcción de reservorio V = 2,700 m3	40	0	0	1,040,654	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,040,654	312,196
Construcción de reservorio V = 1,000 m3	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	717,118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	717,118	466,127
REDES PRIMARIAS		0	0	347,397	228,078	0	0	0	0	0	0	0	0	0	0	268,935	0	0	0	0	0	118,138	0	0	0	0	132,573	0	0	0	0	1,095,120	383,514
Suministro. de redes primarias de distribución	30	0	0	347,397	228,078	0	0	0	0	0	0	0	0	0	0	268,935	0	0	0	0	0	118,138	0	0	0	0	132,573	0	0	0	0	1,095,120	383,514
REDES SECUNDARIAS		68,787	92,365	123,773	119,527	114,740	109,383	159,585	117,996	173,620	177,029	180,470	183,942	187,445	190,980	194,546	198,144	201,773	205,433	209,125	212,848	216,602	220,388	224,205	228,054	231,934	235,845	239,787	227,187	221,532	224,284	5,491,326	3,031,040
Suministro. de redes secundarias de distribución	30	68,787	92,365	123,773	119,527	114,740	109,383	159,585	117,996	173,620	177,029	180,470	183,942	187,445	190,980	194,546	198,144	201,773	205,433	209,125	212,848	216,602	220,388	224,205	228,054	231,934	235,845	239,787	227,187	221,532	224,284	5,491,326	3,031,040
Total General (Nuevos Soles)		68,787	203,873	4,210,672	347,605	114,740	109,383	159,585	117,996	173,620	177,029	180,470	183,942	187,445	190,980	463,481	198,144	3,287,582	429,606	209,125	212,848	334,740	220,388	224,205	228,054	231,934	368,418	239,787	227,187	221,532	224,284	13,747,439	5,383,091
Total General (U.S. Dólares)		19,812	58,719	1,212,751	100,117	33,047	31,504	45,963	33,985	50,006	50,988	51,979	52,979	53,988	55,006	133,491	57,069	948,594	123,734	60,232	61,304	96,411	63,476	64,575	65,684	66,801	106,111	69,063	65,434	63,805	64,598	3,958,516	1,550,429
Participación Porcentual		0.50%	1.48%	30.63%	2.53%	0.83%	0.80%	1.16%	0.86%	1.26%	1.29%	1.31%	1.34%	1.36%	1.39%	3.37%	1.44%	23.91%	3.12%	1.52%	1.55%	2.43%	1.60%	1.63%	1.66%	1.69%	2.68%	1.74%	1.65%	1.61%	1.63%	100.00%	

Tasa de Descuento : 9.00%
Tipo de cambio (dic 2003): 3.472 soles/ US $

Costo de Inversión (VNA): 6,350,481
Costo de O & M (VNA): 6,550,358
Valor de Recupero (VNA): 405,730
Valor Actual de Costo: S/.12,495,109

PLAN MAESTRO DE AGUA POTABLE Y ALCANTARILLADO DE EMAPAT S.R.Ltda.
EVALUACIÓN DE ALTERNATIVA DE MÍNIMO COSTO - SISTEMA DE ALCANTARILLADO SANITARIO
2004 - 2033

ALTERNATIVA 1 : PLANTA DE TRATAMIENTO DE AGUAS RESIDUALES "TAMBOPATA"

DESCRIPCION	VIDA UTIL (AÑOS)	AÑOS 2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	TOTAL S/.	VALOR DE RECUPERO
ESTACION DE BOMBEO		0	0	2,160,114	0	0	0	0	0	0	0	0	0	0	0	0	0	579,489	0	0	0	0	0	0	0	0	0	0	0	0	0	2,739,603	556,952
Ampliación de EB-1 a Qp = 11.39 lps - 1 bomba P = 1 HP	40	0	0	9,138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9,138	0
Construcción de EB-2 para Qp = 5.66 lps - 2 bombas P = 9 HP	40	0	0	336,853	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	336,853	80,312
Construcción de EB-3 para Qp = 64.26 lps - 2 bombas P = 45 HP	40	0	0	917,102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	917,102	220,164
Construcción de EB-4 para Qp = 9.06 lps - 2 bombas P = 9 HP	40	0	0	336,853	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	336,853	80,312
Construcción de EB-5 para Qp = 5.66 lps - 2 bombas P = 7 HP	40	0	0	302,423	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	302,423	72,912
Construcción de EB-6 para Qp = 2.67 lps - 2 bombas P = 4 HP	40	0	0	257,745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257,745	64,629
Ampliación de EB-1 para Qp = 17.23 lps - 2 bombas P = 14 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90,359	0	0	0	0	0	0	0	0	0	0	0	0	0	90,359	6,024
Ampliación de EB-2 para Qp = 8.56 lps - 2 bombas P = 12 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82,305	0	0	0	0	0	0	0	0	0	0	0	0	0	82,305	5,487
Ampliación de EB-3 para Qp = 97.35 lps - 2 bombas P = 55 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	206,937	0	0	0	0	0	0	0	0	0	0	0	0	0	206,937	13,796
Ampliación de EB-4 para Qp = 13.72 lps - 2 bombas P = 12 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82,305	0	0	0	0	0	0	0	0	0	0	0	0	0	82,305	5,487
Ampliación de EB-5 para Qp = 8.56 lps - 2 bombas P = 9 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69,146	0	0	0	0	0	0	0	0	0	0	0	0	0	69,146	4,610
Ampliación de EB-6 para Qp = 4.04 lps - 2 bombas P = 5 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48,436	0	0	0	0	0	0	0	0	0	0	0	0	0	48,436	3,229
LINEA DE IMPULSION		0	0	303,161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	303,161	60,632
Sumin./instal. de 323.0 m - 100 mm - PVC	35	0	0	20,187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20,187	4,037
Sumin./instal. de 1,119.0 m - 350 mm - PVC	35	0	0	203,491	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	203,491	40,698
Sumin./instal. de 394.0 m - 150 mm - PVC	35	0	0	27,210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27,210	5,442
Sumin./instal. de 459.0 m - 100 mm - PVC	35	0	0	28,687	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28,687	5,737
Sumin./instal. de 417.0 m - 75 mm - PVC	35	0	0	23,586	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,586	4,717
COLECTORES PRIMARIOS		0	0	606,327	0	0	0	0	0	0	0	0	0	0	0	0	0	173,546	0	0	0	0	0	0	0	0	0	0	0	0	0	779,873	132,980
Sumin./instal. de colectores primarios	30	0	0	606,327	0	0	0	0	0	0	0	0	0	0	0	0	0	173,546	0	0	0	0	0	0	0	0	0	0	0	0	0	779,873	132,980
COLECTORES SECUNDARIOS		82,979	82,979	1,772,315	696,539	661,258	659,586	656,818	652,878	647,694	641,197	633,323	624,010	613,199	600,837	586,873	571,259	553,951	534,910	514,098	491,483	467,034	440,726	602,892	635,401	650,022	664,833	679,834	695,024	710,404	725,974	18,550,331	8,963,498
Sumin./instal. de colectores secundarios	30	82,979	82,979	1,772,315	696,539	661,258	659,586	656,818	652,878	647,694	641,197	633,323	624,010	613,199	600,837	586,873	571,259	553,951	534,910	514,098	491,483	467,034	440,726	602,892	635,401	650,022	664,833	679,834	695,024	710,404	725,974	18,550,331	8,963,498
EMISORES E INTERCEPTORES		0	0	592,622	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	592,622	118,524
Sumin./instal. de 1,332.2 - 400 mm + 498.8 - 450 mm - PVC + 20 buzones	35	0	0	592,622	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	592,622	118,524
TRATAMIENTO Y DISPOSICION FINAL		0	0	1,984,074	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,984,074	595,222
Construcción de Planta de Tratamiento PTAR-1 - Area = 8.24 Ha	40	0	0	1,984,074	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,984,074	595,222
Total General (Nuevos Soles)		82,979	82,979	7,418,613	696,539	661,258	659,586	656,818	652,878	647,694	641,197	633,323	624,010	613,199	600,837	586,873	571,259	1,306,986	534,910	514,098	491,483	467,034	440,726	602,892	635,401	650,022	664,833	679,834	695,024	710,404	725,974	24,940,664	10,427,808
Total General (U.S. Dólares)		23,900	23,900	2,136,897	200,616	190,454	189,973	189,176	188,041	186,548	184,677	182,409	179,726	176,613	173,052	169,030	164,533	376,436	154,064	148,070	141,556	134,514	126,937	173,644	183,007	187,218	191,484	195,805	200,180	204,609	209,094	7,185,963	3,003,401
Participación Porcentual		0.33%	0.33%	29.73%	2.79%	2.65%	2.64%	2.63%	2.62%	2.60%	2.57%	2.54%	2.50%	2.46%	2.41%	2.35%	2.29%	5.24%	2.14%	2.06%	1.97%	1.87%	1.77%	2.42%	2.55%	2.61%	2.66%	2.72%	2.79%	2.85%	2.91%	100.00%	

Tasa de Descuento : 9.00%
Tipo de cambio (dic 2003): 3.472 soles/ $

Costo de Inversión (VNA): 11,876,686
Costo de O & M (VNA): 1,731,579
Valor de Recupero (VNA): 785,956
Valor Actual de Costo S/.12,822,309

ALTERNATIVA 2 : PLANTA DE TRATAMIENTO DE AGUAS RESIDUALES "TAMBOPATA" Y PLANTA DE TRATAMIENTO DE AGUAS RESIDUALES "MADRE DE DIOS"

DESCRIPCION	VIDA UTIL (AÑOS)	AÑOS 2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	TOTAL S/.	VALOR DE RECUPERO
ESTACION DE BOMBEO		0	0	2,008,385	0	0	0	0	0	0	0	0	0	0	0	0	0	563,419	0	0	0	0	0	0	0	0	0	0	0	0	0	2,571,804	515,532
Ampliación de EB-1 a Qp = 11.39 lps - 1 bombe P = 3 HP	40	0	0	17,774	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17,774	0
Construcción de EB-2 para Qp = 5.66 lps - 2 bombas P = 9 HP	40	0	0	336,853	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	336,853	80,312
Construcción de EB-3 para Qp = 52.87 lps - 2 bombas P = 35 HP	40	0	0	767,687	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	767,687	183,091
Construcción de EB-4 para Qp = 9.06 lps - 2 bombas P = 9 HP	40	0	0	336,853	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	336,853	80,312
Construcción de EB-5 para Qp = 5.66 lps - 2 bombas P = 7 HP	40	0	0	302,423	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	302,423	72,912
Construcción de EB-6 para Qp = 2.67 lps - 2 bombas P = 4 HP	40	0	0	246,794	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	246,794	61,344
Ampliación de EB-1 para Qp = 17.23 lps - 2 bombas P = 16 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97,969	0	0	0	0	0	0	0	0	0	0	0	0	0	97,969	6,531
Ampliación de EB-2 para Qp = 8.56 lps - 2 bombas P = 12 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82,305	0	0	0	0	0	0	0	0	0	0	0	0	0	82,305	5,487
Ampliación de EB-3 para Qp = 80.13 lps - 2 bombas P = 45 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	183,257	0	0	0	0	0	0	0	0	0	0	0	0	0	183,257	12,217
Ampliación de EB-4 para Qp = 13.72 lps - 2 bombas P = 12 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82,305	0	0	0	0	0	0	0	0	0	0	0	0	0	82,305	5,487
Ampliación de EB-5 para Qp = 8.56 lps - 2 bombas P = 9 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69,146	0	0	0	0	0	0	0	0	0	0	0	0	0	69,146	4,610
Ampliación de EB-6 para Qp = 4.04 lps - 2 bombas P = 5 HP	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48,436	0	0	0	0	0	0	0	0	0	0	0	0	0	48,436	3,229
LINEA DE IMPULSION		0	0	303,161	49,654	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	352,815	71,982
Sumin./instal. de 719.0 m - 150 mm - PVC	35	0	0	0	49,654	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49,654	11,350
Sumin./instal. de 323.0 m - 100 mm - PVC	35	0	0	20,187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20,187	4,037
Sumin./instal. de 1,119.0 m - 350 mm - PVC	35	0	0	203,491	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	203,491	40,698
Sumin./instal. de 394.0 m - 150 mm - PVC	35	0	0	27,210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27,210	5,442
Sumin./instal. de 459.0 m - 100 mm - PVC	35	0	0	28,687	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28,687	5,737
Sumin./instal. de 417.0 m - 75 mm - PVC	35	0	0	23,586	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,586	4,717
COLECTORES PRIMARIOS		0	0	606,327	0	0	0	0	0	0	0	0	0	0	0	0	0	173,546	0	0	0	0	0	0	0	0	0	0	0	0	0	779,873	132,980
Sumin./instal. de colectores primarios	30	0	0	606,327	0	0	0	0	0	0	0	0	0	0	0	0	0	173,546	0	0	0	0	0	0	0	0	0	0	0	0	0	779,873	132,980
COLECTORES SECUNDARIOS		82,979	82,979	1,772,315	696,539	661,258	659,586	656,818	652,878	647,694	641,197	633,323	624,010	613,199	600,837	586,873	571,259	553,951	534,910	514,098	491,483	467,034	440,726	602,892	635,401	650,022	664,833	679,834	695,024	710,404	725,974	18,550,331	8,963,498
Sumin./instal. de colectores secundarios	30	82,979	82,979	1,772,315	696,539	661,258	659,586	656,818	652,878	647,694	641,197	633,323	624,010	613,199	600,837	586,873	571,259	553,951	534,910	514,098	491,483	467,034	440,726	602,892	635,401	650,022	664,833	679,834	695,024	710,404	725,974	18,550,331	8,963,498
EMISORES E INTERCEPTORES		0	0	537,622	422,553	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	960,175	204,108
Sumin./instal. de 356.9 m - 350 mm + 1,474.1 m - 400 mm - PVC + 20 buzones	35	0	0	537,622	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	537,622	107,524
Sumin./instal. de 626m-250mm + 236m-300mm + 684m-350mm - PVC + 13 buzones	35	0	0	0	422,553	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	422,553	96,584
TRATAMIENTO Y DISPOSICION FINAL		0	0	1,600,093	1,043,071	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,643,165	819,026
Construcción de Planta de Tratamiento PTAR-1 - Area = 6.30 Ha	40	0	0	1,600,093	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,600,093	480,028
Adquisición de terreno y Construc. de Pta de Tratam. PTAR-2 - Area = 2.10 Ha	40	0	0	0	1,043,071	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,043,071	338,998
Total General (Nuevos Soles)		82,979	82,979	6,827,903	2,211,817	661,258	659,586	656,818	652,878	647,694	641,197	633,323	624,010	613,199	600,837	586,873	571,259	1,290,916	534,910	514,098	491,483	467,034	440,726	602,892	635,401	650,022	664,833	679,834	695,024	710,404	725,974	25,858,163	10,707,126
Total General (U.S. Dólares)		23,900	23,900	1,966,582	637,044	190,454	189,973	189,176	188,041	186,548	184,677	182,409	179,726	176,613	173,052	169,030	164,533	371,808	154,064	148,070	141,556	134,514	126,937	173,644	183,007	187,218	191,484	195,805	200,180	204,609	209,094	7,447,628	3,083,850
Participación Porcentual		0.32%	0.32%	26.41%	8.55%	2.56%	2.55%	2.54%	2.52%	2.50%	2.48%	2.45%	2.41%	2.37%	2.32%	2.27%	2.21%	4.99%	2.07%	1.99%	1.90%	1.81%	1.70%	2.33%	2.46%	2.51%	2.57%	2.63%	2.69%	2.75%	2.81%	100.00%	

Tasa de Descuento : 9.00%
Tipo de cambio (dic 2003): 3.472 soles/ $

Costo de Inversión (VNA): 12,545,523
Costo de O & M (VNA): 1,753,325
Valor de Recupero (VNA): 807,008
Valor Actual de Costo: S/.13,491,839