

Wastewater Calculations and Cost Estimates
Sage

SAGE INTERCEPTOR AND RECLAIMED WATER PIPELINE CALCULATIONS

INTERCEPTORS									Comments
Pipe Segment	Pipe (ft)	Diameter (In.)	Slope (ft/ft)	Node Q (mgd)	Total Q	Capacity 0.5 d/D (mgd)	Velocity (fps)	Full Pipe Capacity (mgd)	
A	9,050	8	0.0400	0.18	0.18	0.73	6.4	1.5	Flow from Collection Area 2.
B	6,400	10	0.0200	0.54	0.54	0.93	5.3	1.86	50% Flow from Collection Area 1.
C	8,780	12	0.0200	1.07	1.07	1.52	6.0	3.03	Flow from Pipe B and 50% Flow from Collection Area 1.
D	9,160	14	0.0100	1.25	1.25	1.62	4.7	3.23	Combined Flow from Pipe A and C.
RECLAIMED WATER PIPELINES									
E	9,100	8			0.70		3.1	0.00	Conveys total reclaimed flow.
F	15,100	6			0.53		4.1	0.00	Conveys 75% of total reclaimed flow.
G	9,000	4			0.18		3.1	0.00	Conveys 25% of total reclaimed flow.

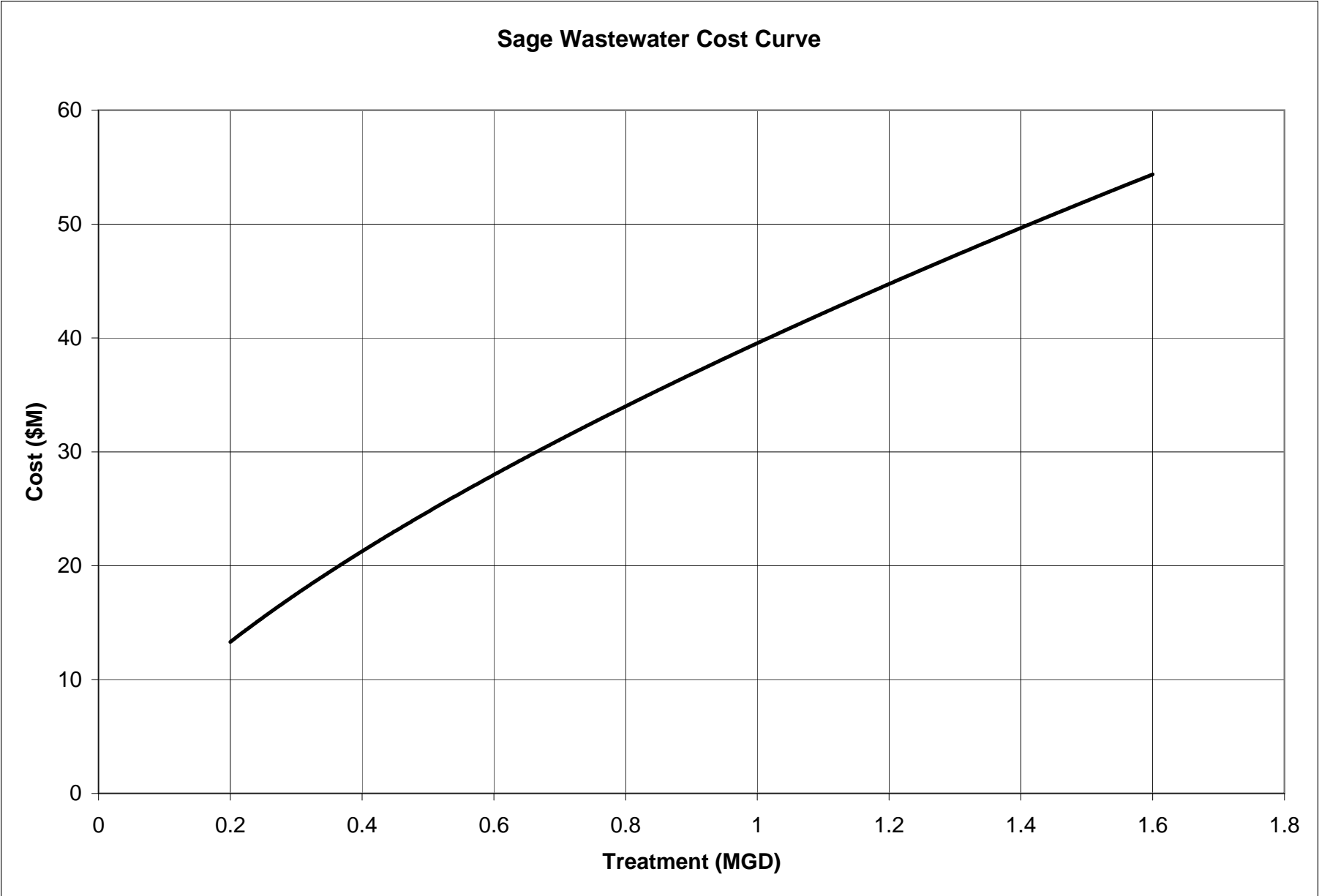
SAGE INTERCEPTORS, RECLAIMED WATER PUMP STATIONS, AND RECLAIMED WATER PIPELINES COSTS

INTERCEPTORS			
Pipe Interceptor	Pipe (ft)	Diameter (In.)	City Cost
A	9,050	8	\$869,000
B	6,400	10	\$768,000
C	8,780	12	\$1,264,000
D	9,160	14	\$1,539,000
Sub Total			\$4,400,000
RECLAIMED WATER PIPELINES			
E	9,100	8	\$874,000
F	15,100	6	\$1,087,000
G	9,000	4	\$432,000
Sub Total			\$2,400,000
RECLAIMED WATER PUMP STATIONS			
North [b]			\$1,000,000
South [b]			\$1,000,000
Sub Total			\$2,000,000
Total			\$8,800,000
Engineering (20%)			\$1,800,000
Contingency (20%)			\$1,800,000
Total			\$12,300,000

[a] 20 Cities ENRCCI = 7,942 May 2007.

[b] Does not include detailed cost analysis.

Sage Wastewater Cost Curve



Sage Effluent Disposal

Area	Disposal Land (ac)	Available Effluent Disposal (AFY)
Irrigated Reclamation Fields	231 (a)	675
Effluent Storage Pond	66 (b)	427
Total		1102

(a) Acreage based on 3.5 ac-ft/yr demand. Assumes no other reclaimed water usage.

(b) Acreage based on 139 million gallon basin with 8 ft depth and 3:1 side slopes

Costs	Area	Cost unit	Total
Irrigation Cost	231	\$31,000	\$7,200,000
Pond Costs	66	\$197,000	\$13,100,000
Total			\$20,300,000

20 Cities ENRCCI = 7,942 May 2007