

Operation and Maintenance Costs

STEG Hybrid vs. Tom's Creek Sewer

Staff Analysis: September 2, 2003

General Assumptions: both systems

- Development Area: 3500 ac. West of bypass
- Development rate: 60 units/year for 38 years, then 110 units/year
- Buildout max 1unit/acre, leaves 2456 units to be built
- Buildout in year 40.
- 50 year projection of costs
- Inflation 3% O&M, Bond interest rate 5%-20 years
- Base condition for study: current sanitary sewer system as installed today with existing pump stations.
- Costs found using today's procedures, techniques, personnel costs, equipment costs, and materials costs.
- Full buildout in TCB= 25 miles of sewer line.
 - 12,160 acres of Town/ 126 miles of sewer line
 - 3500 acres / X miles of line.....X=50. ½ open space RR-1 means ½ as much sewer line or 25 miles.

Tom's Creek Sewer O&M costs

- System Components:
 - 1 Pumping Station (6.5 MGD) (250 HP)
 - Has operating costs: power
 - Repair costs: time to fix faulty valves
 - replacement costs: grinder in each pump, every 10 yrs.
 - inspection costs: 2 staff visit station daily
 - 11.58 miles of main
 - Has maintenance costs: debris, staff time to unclog a line
 - Repair costs: contractor hits line
 - locating costs: Miss utility
 - Resident calls and responses: backups

Tom's Creek Sewer O&M Costs Cont'd

- Example: **Year 6**
 - Misc. equipment replacement:
Tom's Creek pump station 10,000
 - Power costs: T. Creek pump station 7,860
 - New sewer line maintenance (11.93mi) 8,435
 - New locates on the main(13.89 mi.) 2,193
 - Pump station maintenance -47,672
 - Total **-\$19,184**

 - Mapping lines and easements (same development rate as current) 0 hrs/yr.
 - Tom's Creek Pump station inspection 260 hrs/yr
 - Tom's Creek pump station maintenance 520 hrs/yr
 - Total man-hours required 780 hrs/yr
 - Total man-hour cost (\$21/hr) **\$20,085**

 - Total cost in present worth **\$901**
 - Total cost in future worth (in YEAR 6) **\$1,076**

Tom's Creek Sewer O&M Costs Cont'd

- Total Dollars Required: \$1.05 million (present worth)
- Total Man-hour dollars required: \$1.27 million present worth.
- Total Present Worth: \$2.3 million
- Total Future Worth: \$6.1 million

STEG Hybrid O&M Costs

- System Components:
 - 1 Pumping Station (1.2MGD) (15-20 Horsepower)
 - Has operating costs: power
 - Repair costs: time to fix faulty valves
 - replacement costs: control panel relays and contacts, every 7 years
 - inspection costs: 2 staff visit station daily
 - 6 lift stations (1.5 Horsepower) phased over 40 years
 - Same as above
 - 10.76 miles of gravity main and 460 force main bypass
 - Maintenance costs: bush-hogging around valves
 - Repair costs: contractor hits line
 - locating costs: Miss utility
 - 2456 STEG tanks, 60 per year thru 38 years, 110, then 66.
 - Inspection of installation: holds water test, 4 hours
 - Mapping of tanks: GPS for later location
 - Education issues: STEG tank in yard
 - Resident calls and responses: backups
 - Repair costs: crack in riser lid
 - Replacement costs: biotube replacement every 30 years with staff time
 - Locating costs: Miss Utility
 - Operating inspections: once every 3 years
 - Maintenance costs: pumping tank, average once every 10 years.

STEG Hybrid O&M Costs Cont'd

- Example: Year 6

– Replace pump and lift station floats	1,200	
– Power costs: pump station	1,140	
– Power costs:	480	
– 460 force main/Hybrid line maintenance	7,918	
– New locates on the main(13.07 mi.)	<u>2,058</u>	
– Total		\$12,796
– Mapping tanks	60 hrs/yr.	
– Database maintenance	15 hrs./yr	
– Education	40 hrs/yr	
– Resident calls and responses (STEG)	27 hrs/yr	
– Time to replace floats (pump and lift station)	2 hrs/yr	
– Misc. pump station repair time	260 hrs/yr	
– Lift station inspection time	260 hrs/yr	
– Time of STEG tank inspections	45 hrs/yr	
– Inspection of tank installation	<u>240 hrs/yr</u>	
– Total P&E man-hours required (cost \$24.6/hr)	100 hrs/yr	\$2,460
– Total Public works man-hours req'd (cost \$25.75/hr)	849 hrs/yr	\$21,871
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– Total cost in present worth		\$37,127
– Total cost in future worth (in YEAR 6)		\$44,332

STEG O&M Costs Cont'd

- Total Dollars Required: \$4.17 million (present worth)
- Total Man-hour dollars required: \$2.71 million present worth.
- Total Present Worth: \$6.9 million
- Total Future Worth: \$18.5 million

Comparison

- Tom's Creek Sewer
 - Present Worth: **\$2.3 million**
 - Future Worth: **\$6.1 million**
 - Comments: requires less staff time, requires more large O&M costs over time such as large replacement parts.
- STEG Hybrid
 - Present Worth: **\$6.9 million**
 - Future Worth: **\$18.5 million**
 - Comments: requires more staff time, many small O&M costs over time.

Comparison Cont'd

- STEG Hybrid: Present Cap.+ O&M \$13,800,000
- STEG Hybrid: Capital after 20 yrs. \$11,073,477
- STEG Hybrid: O&M after 50 yrs. \$18,500,000

- Tom's Creek Sewer: Present Capital + O&M
\$13,800,000
- Tom's Creek Sewer: Capital after 20 yrs.
\$18,455,795
- Tom's Creek Sewer: O&M after 50 yrs.
\$6,108,494