Sustainable Water and Wastewater Infrustructure
...for Today and Tomorrow

CASE STUDY:

GILFIELD COMPREHENSIVE COMMUNITY DEVELOPMENT PROGRAM

Background:
Many homes in Virginia still lack indoor plumbing. Charles City County, a rural area located approximately 60 miles southeast of Richmond, identified 100 such homes where a conventional septic tank and drainfield is not a viable option. Under a Community Development Block Grant/Indoor Plumbing Rehabilitation program, the County and the State Department of Housing and Community Development provided a grant to serve 25 homes in the Gilfield Church Community with a clustered small community sewer system. NCS Wastewater Solutions, a Division of Northwest Cascade Inc. based in Puyallup Washington, was awarded the Design/Build contract on the basis of competitive bidding.

Charles City County owns and operates the wastewater system under a Memorandum of Agreement (MOA) between them and the State Health Department (the permitting agency). The MOA allows the county to work outside the prescriptive design regulations for sizing wastewater treatment facilities and for siting effluent dispersal systems. (Copy of the MOA can be obtained from the County or from the State Health Department) The County specified very limited design requirements in their bid document. That gave maximum freedom to NCS for developing a site-specific design, affordable to install and to operate.

Special Challenges:
Building a sewer system in established communities like this always presents special challenges:

- Working with homeowners to identify the best connection points,
- Insuring that all needed easements are duly recorded and property boundaries defined,
- Working around existing overhead and underground utilities,
- Excavating in dense clay soils with a high water table,
- Making sure that homeowner expectations were being fully met,
- Managing the paperwork that comes with federally funded projects, including Davis Bacon, EEOC, etc.

Faced with these complexities, several years ago a project of similiar size in the county took more than 12 months to complete.

The Solution:
NCS designed a low pressure sewer collection system, with grinder pumps located at each residence. One thousand gallon top seam water-tight concrete tanks with grinder pumps and float control switches were installed at homes scheduled for sewer connection. The County had a separate contract to connect the home to the tank and to install a control panel and appropriate electrical service.

Small diameter PVC pipe buried 3 feet made installation of sewer collection mains reasonably simple. Sewage from each home is pumped to a one acre central area where a MicroFAST 9.0 treatment unit and UV disinfection system provides treatment to meet required treatment standards.

(Continued on the back with pictures)

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The Solution: *(continued)*

Treated effluent is then dispersed through 15,000 lineal feet of drip tubing placed 10" – 12" inches below the surface divided in four zones. Pressure compensating drip emitters insure equal distribution of treated effluent across the entire dispersal field area.

With Northwest Cascade's experienced and professional crews, the complete project was installed in less than 6 weeks.

Side Sewer

Sewer Forcemain

Treatment Tank Installation

Treatment Facility

Dripfield